WEST Search History

DATE: Friday, October 28, 2005

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☐	L5	((condition$5 or if) near2 "or") same ((imag$5 or pixel$5 or pictur$5 or video$5) with (thin$5 or reduc$5 or rescal$5 or scal$5 or magnif$5 or enlarg$5 or shrink$5))	8
☐	L4	((condition$5 or if) near2 "or") same (odd with even with (reduc$5 or rescal$5 or scal$5 or magnif$5 or enlarg$5 or shrink$5))	4
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☐	L2	((condition$5 or if) adj1 "or") same (odd with (line or row) near2 even)	5
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END OF SEARCH HISTORY

Search Results - Record(s) 1 through 5 of 5 returned.

☐ 1. Document ID: US 20020041718 A1

Using default format because multiple data bases are involved.

L1: Entry 1 of 5   File: PGPB   Apr 11, 2002

PGPUB-DOCUMENT-NUMBER: 20020041718
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020041718 A1

TITLE: Image reduction method, image processing device and method of controlling image processing device

PUBLICATION-DATE: April 11, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Ohmori, Masatake	Kanagawa		JP

US-CL-CURRENT: 382/298

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw Desc | Ima |

☐ 2. Document ID: US 3626427 A

L1: Entry 2 of 5   File: USPT   Dec 7, 1971

DOCUMENT-IDENTIFIER: US 3626427 A
TITLE: LARGE-SCALE DATA PROCESSING SYSTEM

Detailed Description Text (216):
The operation of the X/Y-W/Z trigger in controlling the X- and Y-registers is described in detail in the foregoing sections. However, should there be some sort of malfunction whereby a select signal is not followed by a respectively corresponding advance signal from storage, or whereby operation of the triggers themselves becomes faulty, it is possible that the X/Y and W/Z triggers could fall out of synchronization with one another. The circuit of FIG. 51 will operate, at a time when none of the storage units are busy, to check the synchronism of the X/Y and W/Z triggers. Specifically, a signal indicating an error in this synchronization is generated on an X/Y-W/Z SYNC CHK (synchronization check) line by a latch 1 which is set in response to an AND-circuit 2 that operates under control of an OR-circuit 3 in dependence upon either one of two AND-circuits 4, 5. The AND-circuit 4 responds to concurrent presence of signals on the X and Z lines, and the AND-circuit 5 responds to signals on the Y and W lines. Thus, the OR-circuit 3 will receive an input from both of the AND-circuits 4, 5 each time that the W/Z trigger is set to W concurrently with the X/Y trigger being set to Y. However, the AND-circuit 2 prevents the output of the OR-circuit 3 from setting the latch 1 except at late B time (due to a signal on the LBR line) during a cycle in which there are signals present on both an ODD NOT BUSY line and an EVEN NOT BUSY line. In other words, when the X/Y register circuits are in a quiescent state, due to the lack of outstanding storage

operations being performed, then the AND-circuit 2 will permit the latch 1 to sample the condition of the OR-circuit 3. This time (odd and even not busy) is a time when this relation can easily be identified, and if both outputs of a trigger are off together, no error signal will result; however, this can only occur for a simultaneous failure of two circuits (AND's and OR's), so such a failure is rather unlikely. It should be noted that if one of the triggers X/Y, W/Z fails such that both outputs of the trigger come up at one time, then one of the AND-circuits 4, 5 will provide an error signal. The latch 1 is reset by a signal on a CHK RST (Check Reset) line supplied by the I unit.

3. Document ID: JP 2003150952 A

L1: Entry 3 of 5   File: JPAB   May 23, 2003

Figs indicate related foreign app (also #4-5)

DOCUMENT-IDENTIFIER: JP 2003150952 A
TITLE: IMAGE REDUCTION METHOD, IMAGE PROCESSOR AND CONTROL METHOD FOR IMAGE PROCESSOR

Abstract Text (2):
SOLUTION: The image reduction in the sub-scanning direction is performed by conditional OR processing, and a variable power point determined according to the reduction rate is limited to the odd-numbered line or the even-numbered line, whereby the processor cost of the processor for realizing the reduction processing in the sub-scanning direction by the conditional OR processing can be reduced.

4. Document ID: JP 2002051209 A

L1: Entry 4 of 5   File: JPAB   Feb 15, 2002

DOCUMENT-IDENTIFIER: JP 2002051209 A
TITLE: IMAGE REDUCING METHOD, IMAGE PROCESSOR AND CONTROL METHOD FOR THE PROCESSOR

Abstract Text (2):
SOLUTION: Since an image is reduced in the subscanning direction by conditional OR processing and a magnification point to be determined corresponding to a reduction rate is limited only to odd-numbered lines or even-numbered lines, there is an effect capable of reducing the device costs of a device for providing reducing processing in the subscanning direction by conditional OR processing.

5. Document ID: JP 2003150952 A

L1: Entry 5 of 5   File: DWPI   May 23, 2003

DERWENT-ACC-NO: 2003-445086

TITLE: Image reduction method in image processor of facsimile, involves decimating image of odd or even numbered line by conditional OR processing

Basic Abstract Text (6):
ADVANTAGE - Since the image of odd numbered line and even numbered line are decimated by conditional OR processing, the cost of the image processor is reduced.

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw Desc | Ima |

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Term	Documents
IF	210
IFS	2187
"OR"	426967
ORS	4634
ODD	125115
ODDS	8645
LINE	3839721
LINES	1905598
ROW	464707
ROWS	357178
EVEN	3434674
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☐ 1. Document ID: US 20030137697 A1

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L5: Entry 1 of 8   File: PGPB   Jul 24, 2003

PGPUB-DOCUMENT-NUMBER: 20030137697
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20030137697 A1

TITLE: Image signal processing apparatus

PUBLICATION-DATE: July 24, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Sato, Shinichi	Yokohama-shi		JP
Naito, Yoshikazu Y	Yokohama-shi		JP
Watanabe, Toshiaki	Yokohama-shi		JP

US-CL-CURRENT: 358/2.1; 358/1.2, 358/3.06, 358/3.27

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw Desc | Ima |

☐ 2. Document ID: US 20020041718 A1

L5: Entry 2 of 8   File: PGPB   Apr 11, 2002

DOCUMENT-IDENTIFIER: US 20020041718 A1
TITLE: Image reduction method, image processing device and method of controlling image processing device

Abstract Paragraph:
A method of reducing a size of a binary image, includes the steps of reducing the size of the binary image in a sub-scanning direction by using a conditional OR process and limiting a size-change point determined by a reduction rate to an odd-number line or an even-number line.

Summary of Invention Paragraph:
[0007] A method dealing with a problem about the decrease in quality of the reduced image caused by the above-described image reduction methods is a conditional OR process, for example. According to the conditional OR process, values of pixel data after an image reduction process are determined by the following equation (I).

Summary of Invention Paragraph:
[0009] By adopting the conditional OR process to the image reduction process, white pixels can remain in a reduced image, even in a case in which the white pixels are arranged so that the white pixels become black by the simple thinning-out method. Thus,

the adoption of the <u>conditional OR</u> process to the <u>image reduction</u> process can suppress decrease in quality of a <u>reduced image</u>.

Summary of Invention Paragraph:
[0010] The above-described <u>conditional OR</u> process is basically a process to <u>reduce</u> two <u>pixels</u> to one as shown in FIGS. 1A and 1B, and, thus, needs to store a resulted <u>pixel</u> that is necessary for the next calculation, separately for each focused <u>pixel</u> whose order is an odd or even number, as shown in FIGS. 2A, 2B and 2C.

Summary of Invention Paragraph:
[0012] In a case in which this <u>conditional OR</u> process is applied to an <u>image reduction</u> process in a sub-scanning direction, white <u>pixels</u> can remain in a <u>reduced image</u> similarly to an <u>image reduction</u> process in a main-scanning direction, even if white <u>pixels</u> are arranged so that the white <u>pixels</u> become black by the simple <u>thinning</u>-out method. Thus, the adoption of the <u>conditional OR</u> process to the <u>image reduction</u> process can suppress decrease in quality of a <u>reduced image</u>.

Summary of Invention Paragraph:
[0013] However, in the case in which the <u>conditional OR</u> process is applied to the <u>image reduction</u> in the sub-scanning direction, memory means is necessary for storing results of carrying out the <u>conditional OR</u> process to each of a line whose order is an odd number and a line whose order is an even number, thereby increasing a device cost.

Summary of Invention Paragraph:
[0014] Accordingly, it is a general object of the present invention to provide an <u>image reduction</u> method, an <u>image</u> processing device and a method of controlling the <u>image</u> processing device. A more particular object of the present invention is to provide an <u>image reduction</u> method, an <u>image</u> processing device and a method of controlling the <u>image</u> processing device, by which a device cost decreases in a case in which a <u>conditional OR</u> process is applied to an <u>image reduction</u> process in a sub-scanning direction.

Summary of Invention Paragraph:
[0016] <u>reducing</u> the size of the binary <u>image</u> in a sub-scanning direction by using a <u>conditional OR</u> process; and

Summary of Invention Paragraph:
[0020] <u>thinning</u> out an <u>image</u> of an odd-numbered line and producing a <u>reduced image</u> using a <u>conditional OR</u> process for an even-number line immediately following the odd-number line when a size-change point determined by a <u>reduction</u> rate is the odd-number line,

Summary of Invention Paragraph:
[0021] producing a <u>reduced image</u> using a <u>conditional OR</u> process for an even-number line and <u>thinning</u> out an <u>image</u> of an odd-number line immediately following the even-number line when the size-change point determined by the <u>reduction</u> rate is the even-number line.

Summary of Invention Paragraph:
[0023] <u>thinning</u> out an <u>image</u> of an even-numbered line and producing a <u>reduced image</u> using a <u>conditional OR</u> process for an odd-number line immediately following the even-number line when a size-change point determined by a <u>reduction</u> rate is the even-number line,

Summary of Invention Paragraph:
[0024] producing a <u>reduced image</u> using a <u>conditional OR</u> process for an odd-number line and <u>thinning</u> out an <u>image</u> of an even-number line immediately following the odd-number line when the size-change point determined by the <u>reduction</u> rate is the odd-number line.

Summary of Invention Paragraph:
[0025] According to the above-described invention, a device cost can be decreased to below that of a device that uses the <u>conditional OR</u> process to <u>reduce</u> the size of a binary <u>image</u> in the sub-scanning direction.

Summary of Invention Paragraph:
[0028] Additionally, the above-described objects of the present invention are also

achieved by the method of reducing the size of a binary image as described above, wherein, when a target reduction rate is 50 percent or below (for example, 30%), a binary image of the target reduction rate is produced by reducing the size of the binary image in the sub-scanning direction to twice (60% in the above-mentioned example) the target reduction rate using a simple thinning-out method and further reducing the reduced binary image to the target reduction rate (30% in the above-mentioned example) using the conditional OR process.

Summary of Invention Paragraph:
[0031] an image size reduction component that reduces the size of the binary image in a sub-scanning direction by using a conditional OR process; and

Summary of Invention Paragraph:
[0035] a first component that thins out an image of an odd-numbered line and produces a reduced image using a conditional OR process for an even-number line immediately following the odd-number line when a size-change point determined by a reduction rate is the odd-number line; and

Summary of Invention Paragraph:
[0036] a second component that produces a reduced image using a conditional OR process for an even-number line and thins out an image of an odd-number line immediately following the even-number line when the size-change point determined by the reduction rate is the even-number line.

Summary of Invention Paragraph:
[0038] a first component that thins out an image of an even-numbered line and produces a reduced image using a conditional OR process for an odd-number line immediately following the even-number line when a size-change point determined by a reduction rate is the even-number line; and

Summary of Invention Paragraph:
[0039] a second component that produces a reduced image using a conditional OR process for an odd-number line and thins out an image of an even-number line immediately following the odd-number line when the size-change point determined by the reduction rate is the odd-number line.

Summary of Invention Paragraph:
[0040] According to the above-described invention, a device cost can be decreased to below that of a device that uses the conditional OR process to reduce the size of a binary image in the sub-scanning direction.

Summary of Invention Paragraph:
[0043] Additionally, the above-described objects of the present invention are also achieved by the image processing device as described above, wherein the image size reduction component, when a target reduction rate is 50 percent or below, produces a binary image of the target reduction by reducing the size of the binary image in the sub-scanning direction using a simple thinning-out method to twice the target reduction rate and further reduces the reduced binary image to the target reduction rate using the conditional OR process.

Summary of Invention Paragraph:
[0048] a conditional OR processing component that reduces a size of an image in a sub-scanning direction using a conditional OR process;

Summary of Invention Paragraph:
[0051] a control component that inputs binary image data of a current processing line, preceding reduction result data read from the reduction result line memory component, and binary image data of an immediately preceding line read from the immediately preceding line memory component to the conditional OR processing component so as to perform conditional OR processing of the current processing line, and limits a size-change point determined by a reduction rate and employing the data output from the conditional OR processing component to either an odd-number line or an even-number line.

Summary of Invention Paragraph:
[0054] a conditional OR processing component that reduces a size of an image in a sub-scanning direction using a conditional OR process;

Summary of Invention Paragraph:
[0057] a control component that inputs binary image data of a current processing line, preceding reduction result data read from the reduction result line memory component, and binary image data of an immediately preceding line read from the immediately preceding line memory component to the conditional OR processing component so as to perform conditional OR processing of the current processing line, wherein:

Summary of Invention Paragraph:
[0058] when a size-change point determined by a reduction rate is an odd-number line, the control component thins out an image of the odd-number line and outputs reduction data output from the conditional OR processing component for an even-number line immediately succeeding the odd-number line; and

Summary of Invention Paragraph:
[0059] when the size-change point determined by the reduction rate is an even-number line, the control component outputs reduction data output from the conditional OR processing component for the even-number line and thins out an image of an odd-number line immediately succeeding the even-number line.

Summary of Invention Paragraph:
[0061] a conditional OR processing component that reduces a size of an image in a sub-scanning direction using a conditional OR process;

Summary of Invention Paragraph:
[0064] a control component that inputs binary image data of a current processing line, preceding reduction result data read from the reduction result line memory component, and binary image data of an immediately preceding line read from the immediately preceding line memory component to the conditional OR processing component so as to perform conditional OR processing of the current processing line, wherein:

Summary of Invention Paragraph:
[0065] when a size-change point determined by a reduction rate is an even-number line, the control component thins out an image of the even-number line and outputs reduction data output from the conditional OR processing component for an odd-number line immediately succeeding the even-number line; and

Summary of Invention Paragraph:
[0066] when the size-change point determined by the reduction rate is an odd-number line, the control component outputs reduction data output from the conditional OR processing component for the odd-number line and thins out an image of an even-number line immediately succeeding the odd-number line.

Summary of Invention Paragraph:
[0067] According to the above-described invention, a device cost can be decreased to below that of a device that uses the conditional OR process to reduce the size of a binary image in the sub-scanning direction.

Summary of Invention Paragraph:
[0070] Additionally, the above-described objects of the present invention are also achieved by the image processing device as described above, wherein the control component, when a target reduction rate is 50 percent or below, produces a binary image of the target reduction rate by reducing the size of the binary image in the sub-scanning direction to twice the target reduction rate using a simple thinning-out method and further reducing the reduced binary image to the target reduction rate using the conditional OR process.

Summary of Invention Paragraph:
[0073] reducing a size of an image in a sub-scanning direction using a conditional OR process conducted by a conditional OR processing component;

Summary of Invention Paragraph:
[0076] inputting binary image data of a current processing line, preceding reduction result data read from the reduction result line memory component, and binary image data of an immediately preceding line read from the immediately preceding line memory component to the conditional OR processing component so as to perform conditional OR processing of the current processing line; and

Summary of Invention Paragraph:
[0081] reducing a size of an image in a sub-scanning direction using a conditional OR process conducted by a conditional OR processing component;

Summary of Invention Paragraph:
[0084] inputting binary image data of a current processing line, preceding reduction result data read from the reduction result line memory component, and binary image data of an immediately preceding line read from the immediately preceding line memory component to the conditional OR processing component so as to perform conditional OR processing of the current processing line;

Summary of Invention Paragraph:
[0085] thinning out an image of an odd-number line and outputting reduction data output from the conditional OR processing component for an even-number line immediately succeeding the odd-number line when a size-change point determined by a reduction rate is the odd-number line; and

Summary of Invention Paragraph:
[0086] outputting reduction data output from the conditional OR processing component for an even-number line and thinning out an image of an odd-number line immediately succeeding the even-number line when the size-change point determined by the reduction rate is the even-number line.

Summary of Invention Paragraph:
[0088] reducing a size of an image in a sub-scanning direction using a conditional OR process conducted by a conditional OR processing component;

Summary of Invention Paragraph:
[0091] inputting binary image data of a current processing line, preceding reduction result data read from the reduction result line memory component, and binary image data of an immediately preceding line read from the immediately preceding line memory component to the conditional OR processing component so as to perform conditional OR processing of the current processing line;

Summary of Invention Paragraph:
[0092] thinning out an image of an even-number line and outputting reduction data output from the conditional OR processing component for an odd-number line immediately succeeding the even-number line when a size-change point determined by a reduction rate is the even-number line; and

Summary of Invention Paragraph:
[0093] outputting reduction data output from the conditional OR processing component for an odd-number line and thinning out an image of an even-number line immediately succeeding the odd-number line when the size-change point determined by the reduction rate is the odd-number line.

Summary of Invention Paragraph:
[0094] According to the above-described invention, a device cost can be decreased to below that of a device that uses the conditional OR process to reduce the size of a binary image in the sub-scanning direction.

Summary of Invention Paragraph:
[0097] Additionally, the above-described objects of the present invention are also achieved by the method of controlling an image processing device for processing a binary image as described above, wherein, when a target reduction rate is 50 percent or below, a

binary image of the target reduction rate is produced by reducing the size of the binary image in the sub-scanning direction to twice the target reduction rate using a simple thinning-out method and further reducing the reduced binary image to the target reduction rate using the conditional OR process.

Detail Description Paragraph:
[0120] FIG. 4 is a block diagram showing a construction of the image processing unit 8 for reducing a size of a binary image. The image processing unit 8 includes a main-scanning-direction reduction processing unit (a main reduction unit) 81 and a sub-scanning-direction reduction processing unit (a sub reduction unit) 82. The main-scanning-direction reduction processing unit 81 reduces a size of original binary image data DI in a main-scanning direction at a specified reduction rate, by applying a fixed method such as the above-described conditional OR process. An output of the main-scanning-direction reduction processing unit 81 is supplied as main-scanning-direction reduced data DM to the sub-scanning-direction reduction processing unit 82.

Detail Description Paragraph:
[0123] The main-scanning-direction reduced data DM is supplied to the previous-line memory 85 that stores binary image data of the previous line in the conditional OR process, the conditional OR processing unit 86 that carries out the conditional OR process, and the output circuit 87. Additionally, the reduction-result line memory 88 stores output data DK outputted from the conditional OR processing unit 86 as a processing result of the previous conditional OR process.

Detail Description Paragraph:
[0124] The output circuit 87 outputs the main-scanning-direction reduced data DM or the output data DK of the conditional OR processing unit 86 as the reduced data DS to the next-level device. Additionally, the conditional OR processing unit 86 carries out the conditional OR process to each pixel position of lines whose orders are even numbers based on the main-scanning-direction reduced data DM, previous line data outputted from the previous-line memory 85, and the previous reduced data DS outputted from the reduction-result line memory 88. Subsequently, the conditional OR processing unit 88 outputs the output data DK obtained by carrying out the conditional OR process.

Detail Description Paragraph:
[0135] If it is determined at the step S302 that the current even-number line corresponds to the size-change point, the main-scanning-direction reduced data DM is inputted to the sub reduction unit 82, at a step S303. Subsequently, the sub reduction unit 82 stores the output data DK outputted from the conditional OR processing unit 86, in the reduction-result line memory 88, at a step S304. Additionally, the sub reduction unit 82 outputs the inputted main-scanning-direction reduced data DM as the reduced data DS to the next-level device, at a step S305, in which the sub reduction unit 82 may alternatively output an image normally or output an image processed through conditional OR process. The sub reduction unit 82 repeats the steps S303, S304 and S305 until a line of the main-scanning-direction reduced data DM has been inputted to the sub reduction unit 82.

Detail Description Paragraph:
[0147] According to the conditional OR process, a size of an image cannot be reduced at once if its reduction rate is less than 50%, because of the principle of the conditional OR process. For example, in order to achieve a 30% reduction rate (to obtain an image of a size which is 30% of an original one), two sub-scanning-direction reduction processing units 82 are connected in a cascade.manner, wherein the first sub-scanning-direction reduction processing unit 82 reduces the size of an image to 60% of the image, and the second sub-scanning-direction reduction processing unit 81 reduces the image whose size is reduced to 60% of its original size, to 50% of the image.

Detail Description Paragraph:
[0148] However, since the conditional OR process is basically an OR process, application of the above-described cascade method does not affect preservation of lines in an image, but has a chance to cause decrease in a quality of the image such as line thickening. Thus, in a case in which an image is to be reduced at a targeted reduction rate less than 50%, a reduction rate is initially set to a value that is twice as large as a targeted reduction rate. Subsequently, the simple thinning-out method is applied to the image at

the initially set reduction rate. The conditional OR process is, then, applied to the image processed by the simple thinning-out method, at a 50% reduction rate.

Detail Description Paragraph:
[0163] For example, in a case in which a reduction result is outputted by use of even-number lines, the output data DK of the conditional OR processing circuit 86b is outputted as the reduced data DS, as shown in FIG. 13A. In a case in which a normal image is outputted by use of the even-number lines, the main-scanning-direction reduced data DM inputted to the conditional OR processing circuit 86b is outputted as the reduced data DS, as shown in FIG. 13B.

Detail Description Paragraph:
[0164] In a case in which a normal image is outputted by use of odd-number lines, the output of the reduction-result line memory 88 is passed through the conditional OR processing unit 86a, and is fed back as the data DK to the reduction-result line memory 88, as shown in FIG. 13C. Additionally, the main-scanning-direction reduced data DM inputted to the conditional OR processing unit 86a is outputted as the reduced data DS. Data inputted from the previous-line memory 85 to the conditional OR processing unit 86a is discarded inside the conditional OR processing unit 86a. If an odd-number line corresponds to a line to be thinned out, the reduced data DS shown in FIG. 13C is not outputted.

CLAIMS:

1. A method of reducing a size of a binary image, comprising the steps of: reducing the size of the binary image in a sub-scanning direction by using a conditional OR process; and limiting a size-change point determined by a reduction rate to an odd-number line or an even-number line.

3. A method of reducing a size of a binary image, wherein a reduction process in a sub-scanning direction comprises the steps of: thinning out an image of an odd-numbered line and producing a reduced image using a conditional OR process for an even-number line immediately following the odd-number line when a size-change point determined by a reduction rate is the odd-number line, producing a reduced image using a conditional OR process for an even-number line and thinning out an image of an odd-number line immediately following the even-number line when the size-change point determined by the reduction rate is the even-number line.

8. A method of reducing a size of a binary image, wherein a reduction process in a sub-scanning direction comprises the steps of: thinning out an image of an even-numbered line and producing a reduced image using a conditional OR process for an odd-number line immediately following the even-number line when a size-change point determined by a reduction rate is the even-number line, producing a reduced image using a conditional OR process for an odd-number line and thinning out an image of an even-number line immediately following the odd-number line when the size-change point determined by the reduction rate is the odd-number line.

14. The method of reducing the size of a binary image as claimed in claim 1, wherein, when a target reduction rate is 50 percent or below, a binary image of the target reduction rate is produced by reducing the size of the binary image in the sub-scanning direction to twice the target reduction rate using a simple thinning-out method and further reducing the reduced binary image to the target reduction rate using the conditional OR process.

15. An image processing device for processing a binary image comprising: an image size reduction component that reduces the size of the binary image in a sub-scanning direction by using a conditional OR process; and a limiting component that limits a size-change point determined by a reduction rate to an odd-number line or an even-number line.

17. An image processing device for processing a binary image comprising: a first component that thins out an image of an odd-numbered line and produces a reduced image using a conditional OR process for an even-number line immediately following the odd-number line when a size-change point determined by a reduction rate is the odd-number

line; and a second component that produces a <u>reduced image</u> using a <u>conditional OR</u> process for an even-number line and <u>thins</u> out an <u>image</u> of an odd-number line immediately following the even-number line when the size-change point determined by the <u>reduction</u> rate is the even-number line.

22. An <u>image</u> processing device for processing a binary <u>image</u> method comprising: a first component that <u>thins</u> out an <u>image</u> of an even-numbered line and produces a <u>reduced image</u> using a <u>conditional OR</u> process for an odd-number line immediately following the even-number line when a size-change point determined by a <u>reduction</u> rate is the even-number line; and a second component that produces a <u>reduced image</u> using a <u>conditional OR</u> process for an odd-number line and <u>thins</u> out an <u>image</u> of an even-number line immediately following the odd-number line when the size5 change point determined by the <u>reduction</u> rate is the odd-number line.

28. The <u>image</u> processing device as claimed in claim 15, wherein the <u>image</u> size <u>reduction</u> component, when a target <u>reduction</u> rate is 50 percent or below, produces a binary <u>image</u> of the target <u>reduction by reducing</u> the size of the binary <u>image</u> in the sub-scanning direction using a simple <u>thinning</u>-out method to twice the target <u>reduction</u> rate and further <u>reduces the reduced</u> binary <u>image</u> to the target <u>reduction</u> rate using the <u>conditional OR</u> process.

30. An <u>image</u> processing device for processing a binary <u>image</u> comprising: a <u>conditional OR</u> processing component that <u>reduces</u> a size of an <u>image</u> in a sub-scanning direction using a <u>conditional OR</u> process; a reduction result line memory component that stores data output from the <u>conditional OR</u> processing component; an immediately preceding line memory component that stores binary image data of an immediately preceding line; and a control component that inputs binary <u>image</u> data of a current processing line, preceding <u>reduction</u> result data read from the <u>reduction</u> result line memory component, and binary <u>image</u> data of an immediately preceding line read from the immediately preceding line memory component to the <u>conditional OR</u> processing component so as to perform <u>conditional OR</u> processing of the current processing line, and limits a size-change point determined by a <u>reduction</u> rate and employing the data output from the <u>conditional OR</u> processing component to either an odd-number line or an even-number line.

32. An <u>image</u> processing device for processing a binary <u>image</u> comprising: a <u>conditional OR</u> processing component that <u>reduces</u> a size of an <u>image</u> in a sub-scanning direction using a <u>conditional OR</u> process; a reduction result line memory component that stores data output from the <u>conditional OR</u> processing component; an immediately preceding line memory component that stores binary image data of an immediately preceding line; and a control component that inputs binary <u>image</u> data of a current processing line, preceding <u>reduction</u> result data read from the <u>reduction</u> result line memory component, and binary <u>image</u> data of an immediately preceding line read from the immediately preceding line memory component to the <u>conditional OR</u> processing component so as to perform <u>conditional OR</u> processing of the current processing line, wherein: when a size-change point determined by a <u>reduction</u> rate is an odd-number line, the control component <u>thins</u> out an <u>image</u> of the odd-number line and <u>reduction</u> data is produced by the <u>conditional OR</u> processing component for an even-number line immediately succeeding the odd-number line; and when the size-change point determined by the <u>reduction</u> rate is an even-number line, <u>reduction</u> data is produced by <u>conditional OR</u> processing component for the even-number line and <u>thins</u> out an <u>image</u> of an odd-number line immediately succeeding the even-number line.

37. An <u>image</u> processing device for processing a binary <u>image</u> comprising: a <u>conditional OR</u> processing component that <u>reduces</u> a size of an <u>image</u> in a sub-scanning direction using a <u>conditional OR</u> process; a reduction result line memory component that stores data output from the <u>conditional OR</u> processing component; an immediately preceding line memory component that stores binary image data of an immediately preceding line; and a control component that inputs binary <u>image</u> data of a current processing line, preceding <u>reduction</u> result data read from the <u>reduction</u> result line memory component, and binary <u>image</u> data of an immediately preceding line read from the immediately preceding line memory component to the <u>conditional OR</u> processing component so as to perform <u>conditional OR</u> processing of the current processing line, wherein: when a size-change point determined by a <u>reduction</u> rate is an even-number line, the control component <u>thins</u> out an <u>image</u> of the even-number line and produces <u>reduction</u> data by the <u>conditional OR</u> processing

component for an odd-number line immediately succeeding the even-number line; and when the size-change point determined by the reduction rate is an odd-number line, the control component produces reduction data output by the conditional OR processing component for the odd-number line and thins out an image of an even-number line immediately succeeding the odd-number line.

43. The image processing device as claimed in claim 30, wherein the control component, when a target reduction rate is 50 percent or below, produces a binary image of the target reduction rate by reducing the size of the binary image in the sub-scanning direction to twice the target reduction rate using a simple thinning-out method and further reducing the reduced binary image to the target reduction rate using the conditional OR process.

44. A method of controlling an image processing device for processing a binary image, the method comprising the steps of: reducing a size of an image in a sub-scanning direction using a conditional OR process conducted by a conditional OR processing component; storing data output from the conditional OR processing component in a reduction result line memory component; storing binary image data of an immediately preceding line in an immediately preceding line memory component; inputting binary image data of a current processing line, preceding reduction result data read from the reduction result line memory component, and binary image data of an immediately preceding line read from the immediately preceding line memory component to the conditional OR processing component so as to perform conditional OR processing of the current processing line; and limiting a size-change point determined by a reduction rate and employing the data output from the conditional OR processing component to either an odd-number line or an even-number line.

46. A method of controlling an image processing device for processing a binary image, the method comprising the steps of: reducing a size of an image in a sub-scanning direction using a conditional OR process conducted by a conditional OR processing component; storing data output from the conditional OR processing component in a reduction result line memory component; storing binary image data of an immediately preceding line in an immediately preceding line memory component; inputting binary image data of a current processing line, preceding reduction result data read from the reduction result line memory component, and binary image data of an immediately preceding line read from the immediately preceding line memory component to the conditional OR processing component so as to perform conditional OR processing of the current processing line; thinning out an image of an odd-number line and causing reduction data to be produced by the conditional OR processing component for an even-number line immediately succeeding the odd-number line when a size-change point determined by a reduction rate is the odd-number line; and causing reduction data produced by the conditional OR processing component for an even-number line and thinning out an image of an odd-number line immediately succeeding the even-number line when the size-change point determined by the reduction rate is the even-number line.

47. The method of controlling an image processing device for processing a binary image as claimed in claim 46, wherein the step of producing a reduced image using the conditional OR process produces but does not output the reduced image and instead outputs a non-reduced image for the even-number line.

48. The method of controlling an image processing device for processing a binary image as claimed in claim 46, wherein the step of producing a reduced image using the conditional OR process produces and outputs the reduced image for the even-number line.

49. The method of controlling an image processing device for processing a binary image as claimed in claim 46, wherein the step of producing a reduced image using the conditional OR process method produces but does not output a reduced image and instead outputs a non-reduced image for the even-number line when the immediately preceding odd-number line is not thinned out.

50. The method of controlling an image processing device for processing a binary image as claimed in claim 46, wherein the step of producing a reduced image using the conditional OR process method produces and outputs a reduced image for the even-number line when the immediately preceding odd-number line is thinned out.

51. A method of controlling an image processing device for processing a binary image, the method comprising the steps of: reducing a size of an image in a sub-scanning direction using a conditional OR process conducted by a conditional OR processing component; storing data output from the conditional OR processing component in a reduction result line memory component; storing binary image data of an immediately preceding line in an immediately preceding line memory component; inputting binary image data of a current processing line, preceding reduction result data read from the reduction result line memory component, and binary image data of an immediately preceding line read from the immediately preceding line memory component to the conditional OR processing component so as to perform conditional OR processing of the current processing line; thinning out an image of an even-number line and causing reduction data to be produced by the conditional OR processing component for an odd-number line immediately succeeding the even-number line when a size-change point determined by a reduction rate is the even-number line; and causing reduction data produced by the conditional OR processing component for an odd-number line and thinning out an image of an even-number line immediately succeeding the odd-number line when the size-change point determined by the reduction rate is the odd-number line.

57. The method of controlling an image processing device for processing a binary image as claimed in claim 44, wherein, when a target reduction rate is 50 percent or below, a binary image of the target reduction rate is produced by reducing the size of the binary image in the sub-scanning direction to twice the target reduction rate using a simple thinning-out method and further reducing the reduced binary image to the target reduction rate using the conditional OR process.

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw Desc | Ima |

□ 3. Document ID: JP 2003219157 A

L5: Entry 3 of 8   File: JPAB   Jul 31, 2003

DOCUMENT-IDENTIFIER: JP 2003219157 A
TITLE: IMAGE SIGNAL PROCESSING APPARATUS

Abstract Text (2):
SOLUTION: For an input image from an image reading device 101, a dot decision information adding circuit 102 decides a dot image in advance with a cycle characteristic of the image noted, the result of the decision is added to the image as dot decision information, and the various image processing are executed in an arbitrary order by using the image data. Also, in each of processing blocks 103, 104 and 105, the added dot decision information remain and are transferred to the next block. In a magnification/reduction circuit 104 in the case of magnification, the magnified decision information is decided on the basis of a relation between the positions of pixels to be outputted and dot decision information before and after the pixels, and in the case of reduction, reduced dot decision information is decided on the basis of the majority of dot decision information in a range of input pixel according to one pixel to be outputted or a OR condition.

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw Desc | Ima |

□ 4. Document ID: JP 2003150952 A

L5: Entry 4 of 8   File: JPAB   May 23, 2003

DOCUMENT-IDENTIFIER: JP 2003150952 A
TITLE: IMAGE REDUCTION METHOD, IMAGE PROCESSOR AND CONTROL METHOD FOR IMAGE PROCESSOR

Abstract Text (1):
PROBLEM TO BE SOLVED: To provide an image reduction method, an image processor and a
control method for an image processor, capable of reducing the processor cost in the case
of applying conditional OR processing to the reduction processing in the sub-scanning
direction.

Abstract Text (2):
SOLUTION: The image reduction in the sub-scanning direction is performed by conditional
OR processing, and a variable power point determined according to the reduction rate is
limited to the odd-numbered line or the even-numbered line, whereby the processor cost of
the processor for realizing the reduction processing in the sub-scanning direction by the
conditional OR processing can be reduced.

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw Desc | Ima |

☐ 5. Document ID: JP 2002051209 A

L5: Entry 5 of 8   File: JPAB   Feb 15, 2002

DOCUMENT-IDENTIFIER: JP 2002051209 A
TITLE: IMAGE REDUCING METHOD, IMAGE PROCESSOR AND CONTROL METHOD FOR THE PROCESSOR

Abstract Text (1):
PROBLEM TO BE SOLVED: To provide an image reducing method, an image processor and a
control method for the same, with which device costs can be reduced when applying
conditional OR processing to reducing processing in a subscanning direction.

Abstract Text (2):
SOLUTION: Since an image is reduced in the subscanning direction by conditional OR
processing and a magnification point to be determined corresponding to a reduction rate
is limited only to odd-numbered lines or even-numbered lines, there is an effect capable
of reducing the device costs of a device for providing reducing processing in the
subscanning direction by conditional OR processing.

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw Desc | Ima |

☐ 6. Document ID: JP 02073772 A

L5: Entry 6 of 8   File: JPAB   Mar 13, 1990

DOCUMENT-IDENTIFIER: JP 02073772 A
TITLE: FACSIMILE TRANSMITTER

Abstract Text (2):
CONSTITUTION: When a transmission original is fed from the right to the left direction,
the presence of the original is detected at the original tip by the sensor 1 and when the
paper feed is advanced, the presence of the original is detected by the sensor 2. The
absence of the original is detected by the sensor 1 early at the original tail end part

and the sensor 2 detects the absence of the original. Since an output waveform of the OR circuit 3 is all OR output of outputs of the sensors 1, 2, the part from the detection of the presence of the original by the sensor 1 at the original tip till the absence of the original is detected by the sensor 2 at the original tail end represents the original presence interval and the range corresponds to the subscanning period of the transmission picture. Thus, the missing part of the transmission picture in the subscanning direction with respect to the sent original is reduced by reading the transmission picture depending on the OR condition of the original presence state from the two sensors.

☐ 7. Document ID: JP 62112475 A

L5: Entry 7 of 8   File: JPAB   May 23, 1987

DOCUMENT-IDENTIFIER: JP 62112475 A
TITLE: LOW DENSITY CONVERSION METHOD FOR PICTURE ELEMENT OF BINARY IMAGE

Abstract Text (1):
PURPOSE: To reduce the size of hardware and to shorten an arithmetic processing time of software by setting up four picture elements of an original image surrounding the picture elements of a noticed conversion image to A~D, calculating logical values in respective noticed picture elements in accordance with four tables previously determined on the basis of specific conditions and using ORs of the calculated logical values as binary information.

☐ 8. Document ID: JP 2003150952 A

L5: Entry 8 of 8   File: DWPI   May 23, 2003

DERWENT-ACC-NO: 2003-445086
DERWENT-WEEK: 200342
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TITLE: Image reduction method in image processor of facsimile, involves decimating image of odd or even numbered line by conditional OR processing

Basic Abstract Text (1):
NOVELTY - A binary image is reduced by decimating the image of odd or even numbered line by conditional OR processing, when the variable magnification point determined according to the image reduction rate, is determined to be odd or even numbered line.

Basic Abstract Text (6):
ADVANTAGE - Since the image of odd numbered line and even numbered line are decimated by conditional OR processing, the cost of the image processor is reduced.

Term	Documents
IF	210
IFS	2187
"OR"	426967
ORS	4634
CONDITION$5	0
CONDITION	2050746
CONDITIONA	35
CONDITIONABLE	339
CONDITIONABLY	1
CONDITIONAER	5
CONDITIONAI	2
(((CONDITION$5 OR IF) NEAR2 "OR") SAME ((IMAG$5 OR PIXEL$5 OR PICTUR$5 OR VIDEO$5) WITH (THIN$5 OR REDUC$5 OR RESCAL$5 OR SCAL$5 OR MAGNIF$5 OR ENLARG$5 OR SHRINK$5))).PGPB,USPT,EPAB,JPAB,DWPI,TDBD.	8

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